

## REPAIR OF CONCRETE

a. General. - Concrete shall be repaired in accordance with this paragraph, paragraph \_\_\_\_\_ (Tolerances for Concrete Construction), and Bureau of Reclamation "Standard Specifications for Repair of Concrete," dated January 4, 1982.

Minor formed surface repairs, such as sack rubbing or surface grinding, shall be completed within 2 hours after form removal. Dry-pack, concrete replacement less than 10 inches thick, and portland cement mortar repairs shall be completed within 7 days of the original concrete placement or shall utilize approved epoxy-resin bonding systems. Repairs involving epoxy-resin bonding systems shall be performed after 7 days and before 60 days from the original placement. Concrete replacement over 10 inches thick and all other repairs shall be completed within 60 days after the original placement.

b. Types of repairs. - <sup>1</sup>[Repair of concrete in \_\_\_\_\_ <sup>2</sup>(and to such other areas as directed by the Contracting Officer), shall be made with concrete replacement, epoxy-bonded concrete, dry pack, portland cement mortar, epoxy-bonded epoxy mortar, or injected epoxy resin where and as applicable for the type of repair involved, as provided in the "Standard Specifications for Repair of Concrete": except, that epoxy-bonded, epoxy-mortar shall not be used for outdoor repairs having a surface area greater than 1 square foot.]

Recesses resulting from removal of tie rod ends shall be filled with dry pack or other approved material unless the recesses are later to be covered by concrete; or are later to be covered by fill material and are above the maximum water table elevation.

<sup>3</sup>[Repair of concrete <sup>4</sup>(on surfaces required to receive finish F3) <sup>4</sup>(in the following areas of the work) shall be made with concrete replacement, dry pack, or epoxy-bonded concrete, where and as applicable for the type of repair involved, as provided in the "Standard Specifications for Repair of Concrete":

(1) \_\_\_\_\_.

(2) \_\_\_\_\_.

(3) \_\_\_\_\_.]

<sup>5</sup>[All other repairs shall be made with concrete replacement, dry pack, or portland cement mortar; or with epoxy-bonded concrete, epoxy-bonded epoxy mortar, or injected epoxy resin; where and as applicable for the type of repair involved, as provided in the "Standard Specifications for Repair of Concrete."]

When concrete surfaces are repaired with epoxy-bonded epoxy mortar, the surfaces of the finished epoxy mortar shall, in areas visible to the public, be lightly ground or otherwise

prepared to eliminate gloss and produce a surface color and texture that closely matches the surrounding concrete surfaces.

<sup>6</sup>c. Samples. - The Contractor shall submit samples of epoxy-bonding agent and graded sand for use in mix design of epoxy mortar in accordance with the "Standard Specifications for Repair of Concrete."

<sup>7</sup>d. Cost. - The cost of furnishing all materials and performing all work required in the repair of concrete shall be borne by the Contractor.

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<sup>1</sup>Insert description of existing structures or portions thereof for which use of concrete, epoxy-bonded concrete, and epoxy-bonded epoxy mortar repairs will be required. Delete this subparagraph when use of epoxybonded concrete and epoxy-bonded epoxy mortar repairs are not mandatory for any part of the work.

<sup>2</sup>Include this phrase only when the extent and location of any portion of the repairs to be made cannot be determined until after award of contract. (Normally this phrase will only apply to repair of existing concrete such as previously constructed stilling basins where the repair areas are under water and the full extent of repairs required are to be determined after award of contract.)

<sup>3</sup>Include this subparagraph when repair of specific surfaces of concrete will be limited to concrete, dry pack, or epoxy-bonded concrete, such as for surfaces which, for architectural purposes, the use of portland-cement mortar or epoxy mortar repairs are not desired. List in subparagraphs (1), (2), and (3) the surfaces to which this provision will apply.

<sup>4</sup>Delete or revise as required. The two parts of the sentence that are in parentheses are alternates and only one will be used. If the part referring to finish F3 is used, insert a period after "Standard Specifications" and delete subparagraphs (1), (2), and (3).

<sup>5</sup>When the subparagraphs noted by <sup>1</sup> and <sup>3</sup> are deleted, delete the word "other". This subparagraph will apply for all repairs except when specific features or surfaces are to be limited to specific methods of repair listed in <sup>1</sup> and <sup>3</sup>.

<sup>6</sup>Include this subparagraph when submission of samples is considered necessary. (Normally, samples will be specifically required only when high-velocity flow surfaces are involved in the work, such as those surfaces in spillways and outlet works.)

<sup>7</sup>Delete this subparagraph and substitute "Measurement" and "Payment" statements when specifications are being prepared for repair work for which payment will be made.

3-15-85 Revisions: Revised subparagraph b.